

WHAT IS CLAIMED IS:

1. A digital satellite broadcast receiver which comprises :

an antenna for receiving a satellite signal ;

a tuner for tuning the satellite signal received by the antenna;

5 a modulator which modulates the satellite signal tuned by the tuner into digital signal;

an error corrector which corrects a position error of the satellite antenna using the signal modulated by the modulator, and outputs a corresponding output signal;

10 a microprocessor which receives the signal modulated by the modulator and the output signal of the error corrector, and outputs a control signal which controls the position of the antenna; and

an antenna driver which drives the antenna in accordance with the control signal of the microprocessor.

15 2. The digital satellite broadcast receiver of claim 1, wherein the modulator comprises:

an analog-to-digital converter which converts the analog satellite signal into a digital signal ;

20 a demodulator which is connected to the analog-to-digital converter and demodulates the digital signal.

3. The digital satellite broadcast receiver of claim 1, wherein the antenna driver generates develops a pulse having a predetermine period and on which movement of the antenna is based, the pulse driving the antenna.

4. The digital satellite broadcast receiver of claim 3, wherein the antenna driver comprises:

a control logic which transmits the control signal of the microprocessor;

a motor for driving the antenna in accordance with the control signal of the microprocessor received from the control logic;

a power supply which supplies the power to the motor.

5. The digital satellite broadcast receiver of claim 4, wherein the control logic comprises:

a first buffer which receives a first signal from the microprocessor;

a first gate driver which is connected to the first buffer and transmits the first signal;

a first switching element which receives the first signal from the first gate driver and switches in accordance with the transmitted first signal;

a second switching element which receives the first signal from the first gate driver and switches in accordance with the transmitted first signal;

a second buffer which receives a second signal from the microprocessor;

a second gate driver which is connected to the second buffer and transmits the second signal;

a third switching element which receives the second signal from the second gate driver and switches in accordance with the transmitted second signal; and

a fourth switching element which receives the second signal from the

second gate driver and switches in accordance with the transmitted second signal.

6. The digital satellite broadcast receiver of claim 5, wherein the first switching element is an n-MOS transistor, the second switching element is a p-MOS transistor, the third switching element is an n-MOS transistor, and the fourth switching element is a p-MOS transistor.

7. The digital satellite broadcast receiver of claim 5 or claim 6, wherein the power supply supplies power simultaneously to a common terminal of the second switching element and the fourth element and simultaneously to a common terminal of the first switching element and the third switching element.

8. An antenna driving device which receives power from a AC power source and controls a direction of an antenna, the antenna driving device comprising:

a first plurality of switches which are connected to AC the power source;

a power supply which is connected to the first switches, and receives AC current from the power source and outputs DC current having a predetermined voltage;

a second plurality of switches which is connected to the power supply;

a motor which is connected to the second switches and receives the DC current when the first switches and second switches are connected simultaneously, and controls the direction of the antenna by controlling a rotational direction and a number of rotations.

9. The antenna driving device of claim 8, wherein the second switches are connected after the first switches are connected.

10. A digital analog satellite broadcast receiver comprising:

a satellite antenna which moves and receives both an analog and a digital satellite signal;

an analog set-top box which receives the analog satellite signal from the satellite antenna converts the analog satellite signal into an image signal, and controls a direction of the satellite antenna;

a digital set-top box which receives the digital satellite signal from the satellite antenna, converts the digital satellite signal into an image signal, and controls the direction of the satellite antenna;

a graphic menu generator which receives signals from the digital set-top box and the analog set-top box and generates a plurality of graphic menus for performing various satellite-detecting operations; and

a display device which displays the graphic menus generated by the graphic menu generator.

11. The digital analog satellite broadcast receiver of claim 10, wherein the graphic menu generator comprises:

a synchronizing signal detector which receives the image signal outputted from the analog set-top box and detects a horizontal synchronizing signal and a vertical synchronizing signal;

an MPEG decoder which receives the horizontal synchronizing signal and vertical synchronizing signal detected by the synchronizing signal detector,

and generates and outputs a digital graphic menu signal and the information of a position of the digital graphic menu signal, and which receives the digital image signal from the digital set-top box, and decodes and outputs the digital image signal;

5 a timing controller which receives the information of the position of the digital graphic menu signal from the MPEG decoder and controls a timing of the signal so that the signal corresponds to a standard video synchronizing signal; and

10 a video switch which receives the digital graphic menu signal and the digital image signal from the MPEG decoder and the analog image signal from the analog set-top box, and outputs the analog image signal, the digital graphic menu signal, and the digital image signal in accordance with the information about the position of digital graphic menu signal.

12. The digital analog satellite broadcast receiver of claim 11, wherein
15 the graphic menu comprises:

a first menu which indicates a present direction of the satellite antenna using a bar menu representing a moving limit of the satellite antenna, markings being made within the bar menu indicating the present direction of the satellite antenna; and

20 a second menu which indicates the present position of the satellite using a bar menu representing the moving limit of the satellite antenna, markings being made within the bar menu indicating the present direction of the satellite antenna.

13. The digital analog satellite broadcast receiver of claim 12, wherein the graphic menu further comprises:

a third menu, when selected by the user, which establishes an east limit and a west limit of the satellite antenna and displays these limits as numerical values;

a fourth menu which, when selected by the user, enables the selection of pre-set satellites;

a fifth menu which displays as a numerical value a relative position of the satellite selected in the fourth menu to the moving limit of the satellite antenna displayed in the third menu;

a sixth menu which displays a position error of the satellite antenna and which compensates for the position error of the satellite antenna by adding the position error displayed on the sixth menu to the moving limit displayed on the first menu and to the relative position of the satellite displayed on the fifth menu; and

a seventh menu which displays a magnitude of the signal received by the antenna at the present position.

14. The digital analog satellite broadcast receiver of claim 12, wherein the first menu displays a relative position of pre-found satellites on the bar menu, using markings within the bar menu and having a different color from the bar menu, opposing ends of the bar menu respectively represent west limit and an east limit.

15. The digital analog satellite broadcast receiver of claim 12, wherein

the second menu displays the relative direction of the satellite antenna on the bar menu using markings within the bar menu and having a different color from the bar menu , opposing ends representing a west limit and an east limit.

16. The digital analog satellite broadcast receiver of claim 14 or claim 15, wherein the first, second, third, fourth, fifth, sixth, and seventh menus are overlaid on the analog image when the receiver receives the analog satellite signal.

17. The digital analog satellite broadcast receiver of claim 13, wherein the graphic menu further comprises :

an eighth menu which enables a detection of the satellite selected by the fourth menu, when the user selects the eighth menu;

a ninth menu which enables a detection and storage of the transponder information and position information of the satellite selected in the eighth menu when user selects the ninth menu; and

a tenth menu which enables an operation of the eighth menu and the ninth menu be performed on a plurality of satellites selected by the fourth menu when user selects the tenth menu,

characterized in that the eighth, ninth, and tenth menus are used when the digital analog satellite broadcast receiver receives the digital satellite broadcast.

18. The digital analog satellite broadcast receiver of claim 17, wherein the digital analog satellite broadcast receiver detects the satellites selected in the fourth menu by using the transponder information of the selected satellites

as the satellite antenna moves between the moving limit of the satellite antenna.

19. The digital analog satellite broadcast receiver of claim 17, wherein the operation of storing the position information is performed to display the relative position of the satellites on the bar menu of the first menu with markings of a different color from the small bar menu and to store a relative position number based on the limit numerical value of the third menu.

20. A digital satellite broadcast receiver comprising:

a satellite antenna which receives a satellite signal while moving;

a digital set-top box which receives a digital satellite signal of the satellite signal, converts the digital satellite signal into an image signal, and controls a direction of the satellite antenna;

a graphic menu generator device which receives signals from the digital set-top box and generates a plurality of graphic menus for performing various satellite-detecting operations; and

a display device which displays the graphic menus generated by the graphic menu generator.

21. The digital satellite broadcast receiver of claim 20, wherein the graphic menu comprises:

a first menu which indicates a present direction of the satellite antenna using a bar menu representing a moving limit of the satellite antenna, markings being made within the bar menu indicating the present direction of the satellite antenna; and

a second menu which indicates the present position of the satellite

using a bar menu representing the moving limit of the satellite antenna, markings being made within the bar menu indicating the present direction of the satellite antenna;

a third menu which enables a detection of a desired satellite broadcast when user selects the third menu by using a magnitude of the received signal and a transponder information of the satellite; and

a fourth menu which enables a detection and a storage of the transponder information of the satellite and the position information of the satellite selected by the third menu; and

a fifth menu which enables an the operation of the third menu and the fourth menu be performed on a plurality of satellites selected by the third menu when user selects the fifth menu.

22. A method for receiving digital satellite broadcast comprising steps of:

- setting moving limits of a satellite antenna;
- detecting satellites by measuring a magnitude of a signal received by the satellite antenna by changing a direction of the satellite antenna;
- confirming verification information of a desired satellite;
- setting the direction of the satellite antenna by correcting a position error;
- comparing the verification information of the desired satellite with verification information of the detected satellite;
- changing the direction of the satellite antenna if the verification

information of the desired satellite does not correspond to the verification information of the detected satellite; and

storing the position and the verification information of the detected satellite if the verification information of the desired satellite corresponds to the verification information of the detected satellite.

23. The method for receiving digital satellite broadcast of claim 22, wherein the step of detecting satellites by measuring the magnitude of the signal received by the satellite antenna is performed by measuring an AGC level and a noise level.

24. The method for receiving digital satellite broadcast of claim 23, wherein the step of detecting satellites by measuring the AGC level and the noise level comprises the steps of :

receiving signals from satellites by changing the direction of the antenna;

estimating whether the AGC level of the signal received by the satellite antenna is maximum or whether the noise level of the signal received by the satellite antenna is minimum;

changing the direction of the satellite antenna if the AGC level of the signal received by the satellite antenna is not maximum and if the noise level of the signal received by the satellite antenna is not minimum; and

discontinuing the changing of the direction of the satellite antenna if the AGC level of the signal received by the satellite antenna is maximum or if the noise level of the signal received by the satellite antenna is minimum.

25. The method for receiving digital satellite broadcast of claim 22, wherein the verification information of the desired satellite and the detected satellite includes transponder information and channel information.

26. The method for receiving digital satellite broadcast of claim 22, wherein the correction of the position error in the step of setting the direction of the satellite antenna is performed with a FEC decoder.

27. The method for receiving digital satellite broadcast of claim 26, wherein the step of correction of the positioner using the FEC decoder comprises steps of:

determining if a FEC rate of the detected satellite antenna is

changing the FEC rate if the FEC error rate is;

comparing a FEC error rate of the desired satellite with the FEC error rate of the detected satellite;

changing the FEC rate if the FEC error rate of the desired satellite does not correspond to the FEC error rate of the detected satellite; and

changing the direction of the satellite antenna if the FEC rate is and if the FEC error rate of the desired satellite does not correspond to the FEC error rate of the detected satellite.

28. The method for receiving digital satellite broadcast of claim 22, wherein the step of storing the position of the detected satellite is characterized by storing a number of pulses which are outputted from an antenna driver while the satellite antenna moves from a moving limit of the satellite antenna to the detected satellite.

29. The method for receiving digital satellite broadcast of claim 22, further comprising step of detecting satellites by repeating the steps of claim 22.

30. The method for receiving digital satellite broadcast of claim 22, further comprising steps of:

5 determining a position information of a satellite using position information pre-stored in a microprocessor; and

 finding the desired satellite using the position information of the microprocessor.

31. A method for receiving satellite broadcast used for a satellite broadcast receiver including a display device to displaying a plurality of graphic menus which indicates moving limits and a position of a satellite antenna, and a position of satellites, the method comprising the steps of:

 setting a numerical moving limit of the satellite antenna;

10 displaying a present direction of the satellite antenna with a graphic menu, the present direction of the satellite antenna being displayed on a first bar menu of the graphic menu indicating the moving limit of the satellite antenna;

 displaying a magnitude of a signal received by the satellite antenna with a graphic menu on the display device;

15 determining if a detected satellite is a desired satellite when the signal received by the satellite antenna is maximum; and

 storing a relative position of the detected satellite and displaying in the display device the relative position of the detected satellite with a second bar

menu of the graphic menu, the second bar menu indicating the moving limit of the satellite antenna.

32. The method for receiving satellite broadcast of claim 31, further comprising steps of:

5 selecting a satellite of the detected satellites;

displaying movement of an indicator of the first menu to an indicator of the second menu indicating the selected satellite;

changing a direction of the satellite antenna toward a direction of the selected satellite automatically; and

10 receiving the satellite signal.

33. The method for receiving satellite broadcast of claim 31, wherein the step of determining if the detected satellite is the desired satellite is performed by the user viewing an analog image signal display overlaid on the graphic menus on the display device.

15 34. The method for receiving satellite broadcast of claim 31, wherein the step of determining if the detected satellite is the desired satellite is performed, in the case where the satellite is a digital satellite, by comparing transponder information with transponder information of the desired satellite.

20 35. The method for receiving satellite broadcast of claim 31, further comprising steps of:

displaying the present position of the satellite on the graphic menu of the display device with a relative quantity to the moving limit of the satellite antenna;

displaying a name of the satellites on the graphic menu;

displaying a position error of the satellite antenna with the relative quantity to the moving limit of the satellite antenna on the graphic menu; and

compensating for the position error of the satellite antenna when the graphic menu indicating the position error is selected.

36. The method for receiving satellite broadcast of claim 32, wherein the steps of selecting the desired satellite and receiving the satellite signal is performed by changing a color of the indicator the second menu into a same color of the indicator of the first menu and moving the indicator of the second menu to a same position of the indicator of the second menu.

37. A method for receiving satellite broadcast, comprising steps of:

setting moving limits of a satellite antenna;

detecting signal received from the satellite antenna with changing direction of the satellite antenna;

5 displaying signal strength of the detected signal with a graphic menu which indicates the signal strength of the detected signal; and

detecting a satellite based on the signal strength which is displayed on the graphic menu.

38. The method for receiving satellite broadcast of claim 37, wherein the signal strength displayed on the graphic menu is characterized by AGC level or FEC rate.

39. A method for receiving satellite broadcast, comprising steps of:

10 displaying position of pre-found satellites with markings, of which color is different from a first graphic menu, on the first graphic menu which indicates a moving limit of a satellite antenna;

15 displaying position of the satellite antenna with a making, of which color is different from a first graphic menu, on a second graphic menu which indicates a moving limit of the satellite antenna; and

20 detecting a desired satellite using the first graphic menu and the second graphic menu.

40. A method for receiving satellite broadcast, used for a satellite broadcast receiver including a satellite antenna receiving a satellite signal and a positioner which is connected to the satellite antenna and changes a direction

of the satellite antenna, the method comprising the steps of:

determining if a setting of a satellite position is an initial setting of the satellite position;

setting a moving limit of the satellite antenna if the setting of the satellite position is an initial setting of the satellite position;

detecting a plurality of satellites while changing the direction of the satellite antenna;

modeling a function of a relation between the position of the satellites and the direction of the satellite antenna;

finding an approximate direction of the satellite antenna to a satellite, except pre-found satellites, using the function of the relation between the position of the satellites and the direction of the satellite antenna; and

finding an accurate direction of the satellite antenna by controlling the direction of the satellite antenna.

41. The method for receiving satellite broadcast of claim 37, further comprising steps of:

modeling a function of the relation between the position of the satellites and the direction of the satellite antenna from the pre-found satellites if the setting of the satellite position is the initial setting of the satellite position;

finding an approximate position of an added satellite from the modeled function of the relation between the position of the satellites and the direction of the satellite antenna; and

finding an accurate direction of the satellite antenna by controlling the

direction of the satellite antenna.

REF ID: A6604360